

Earth Science

Rockhounds, NATIONAL Magazine



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November-December, 1957

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Official Publication of the Midwest Federation of Mineralogical Societies.

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EDITOR'S MEMO PAD

"ROCKHOUND'S CHRISTMAS MEDITATION"

*Men look for God and fancy Him concealed
In wonder wording or some bush aflame
But in earth's common things He stands revealed
While stars and trees and flowers spell out His name.*

Which leads us to conjecture, *can man know God?* This is a perennial question, concerning which everyone is entitled to his own opinion. The answer, perhaps, may depend wholly upon any particular man's concept of the Almighty, as well as upon his own innate intelligence; and the seriousness of purpose with which he applies himself to the solution of this ever perplexing enigma.

In posing such a question which we think not inappropriate here at Christmas time, we have no intention whatsoever of moralizing our minds or sermonizing,—our only idea being that, when our minds grow dull as they occasionally do, they may be sorely in need of some new ideas to stimulate and revive them.

If our concept of God is that of a planner, or an architect of this great Universe of which we are of such an infinitesimally small part, then we should say that our knowledge concerning the Supreme Being must come to us through our observations of what He does, and how He goes about to do it. This is a valid concept which has been handed down to us over ages long past, one which never has been more aptly and beautifully stated than by the psalmist of old, when it was written, "The Heavens declare the Glory of God, and the Firmament showeth His handywork".

This then is the point that we should like to make. We have a firm conviction, that there is no one better qualified to appreciate the first part of this premise than the astronomer, nor the last part than the geologist, the Earth Scientist or just plain Rockhound, if you please—and, this is where our hobby comes into the picture.

Whether we are aware of it or not, every Rockhound at times does some profound thinking when he is working with and studying his rocks and minerals. This is true regardless of his educational background or his social status. Many of the greatest truths of all times have been very concisely stated by ancient philosophers, who according to modern standards had no education whatsoever. This fact in it-

self should give us something very much worthwhile to think and ponder over.

Our thought then is, and this may be taken for what it is worth—why is it that in all of our experiences we seldom meet a finer, more honorable, or more likeable set of people than those belonging to the mineral-minded fraternity? There must be some very good reason for this, and we sincerely believe it is because of the opportunity our avocation affords us for insight into the workings of Nature and Nature's God, better perhaps than any other hobby we can name. It gives us a deep appreciation of all creation about us, as well as great respect for the law of orderliness as revealed to us in the life history and structure of the rocks and minerals with which we are so constantly working.



PERSONS AND EVENTS

Looking for programs? Two recent films prepared by the Bell Telephone Company, as their contribution towards the effort to interest more young people in taking up the study of science, are now available for Science Club programs. "Our Mr. Sun", which has been in circulation for about a year, and the more recent film, "The Strange Case of the Cosmic Rays," are exceptionally fine examples of dramatic portrayal of science topics. We would recommend them unqualifiedly as being just about SUPER.



Are you interested in opals? If so, you will revel in a copy of the recent brochure published on "Opals" by the Cranbrook Institute of Science, Bloomfield Hills, Michigan, which contains much historical data, well illustrated, some pictures in color. The pamphlet is sold at 40 cts per copy, post paid.



The Nature Camera Club of Chicago in cooperation with Chicago Natural History Museum, will hold their annual Nature Photography Exhibition in

February, and Janet Hart, secretary, invites all Earth Science camera enthusiasts to participate in this very worthwhile event.

Details are as follows: Exhibition at Chicago Natural History Museum, February 1-23, 1958. Divisions for prints and slides, with classifications in each for geology, flowers, etc., and medals and ribbons as prizes.

Deadline for entries is January 11, and entry forms and information may be obtained from Ted. Farrington, 10300 S. Fairfield Avenue, Chicago 43, Illinois.



The well known *Boise Gem Shop* has now secured a much more suitable location, with considerably more favorable surroundings. They will reopen very soon at 4057 Highway 20, Boise, Idaho; bigger and better than ever.

The business is no longer a partnership, but is owned and operated exclusively by Bert and Pat Cole, the original owners of the Boise Gem Shop, prior to the recent partnership.

They welcome all of their old and new customers and friends at their new location, anytime.



"Trade Practice Rules" for the jewelry trade promulgated in June, 1958, by the Federal Trade Commission, in Washington, D. C., should be a must on the desk of every individual seriously involved in the jewelry industry, whether on the local, manufacturing or dealer level.

Here is a code of ethics with which everyone connected in any way with the jewelry industry should be thoroughly familiar, and which should be scrupulously observed and practiced. This 30 page pamphlet not only discusses and tells what fair "Trade Practices" should be, but defines all terms and phrases commonly employed by the trade, and standards to be set up. It may be obtained by writing, Robert M. Parrish, Secretary, Federal Trade Commission, Washington, D. C.



Friends of Arthur L. Flagg, past president of the American Federation, nationally known in mineralogical circles as a great leader in the field of the mineral avocation, will regret to learn that he is again back in the hospital with, as he says "the same old back, but a new break, the same old hospital but new nurses!" An encour-

aging card would no doubt be appreciated, (P.O. Box 2345, Phoenix, Arizona.



Currently in the mails is the 1957 directory of *Ye Old Timers Club*, listing the names and addresses of members from almost every State in the Union. Symbols are also given with the names which indicate the personal interest which the members may have in the various phases of the hobby.

YOTC is an independent nationwide association of "Old Timers", anyone being over fifty years of age being eligible to membership upon application; each member pays \$2.00 annual dues, \$1.00 of which goes for the club's monthly bulletin, carrying news concerning members, and letters on events long past, telling of experiences which often make very good reading.

The club is an independent affiliate of the American Federation of Mineralogical Societies, with a growing membership, and welcomes all Old Timers who may wish to join. Application should be made by letter, with dues enclosed, sent to S. Elroy McCaw, secretary-treasurer, 1953 Taft Avenue, Bremerton, Washington.



Don Alfredo, writing in this issue on "Bedevilled Minerals", describes many so-called mineral oddities found in the Southwest in a language that really makes them talk. We should remember that where such oddities occur only singly, they may be considered either as an "accidental" or freakish specimen; whereas, whenever they occur in great numbers they must be the result of a definite reason or some combination of circumstances reflecting some law or natural pattern which, when tracked back to its origin, may show a revealing purpose, and may eventually enlarge our knowledge of some of the many unsolved mysteries of the mineral kingdom. For this reason we thank the author for his unique presentation of this very worthwhile discussion.



The *Mineralogist Society of Joliet* opened their 28th annual lecture season on the evening of September 26, in the Music Hall of the Joliet Township High School building, with the showing of the film "Our Mr. Sun" as the major part of the program. Workshop meetings are held regularly between the lecture meetings.

The Joliet Society, established in 1930, is the oldest club west of the Allegheny Mts., and has been very influential in the development of the great Earth Science movement throughout the entire country. Earth Science has been taught continuously in the High School as a major science subject since 1896.



Sunday, September 29, marked the 20th annual joint field trip to the famous fern fossil collecting beds of the Northern Illinois Coal Company strip mines in the Wilmington-Coal City area, by the Earth Science Clubs of the Chicago region.

The outing is sponsored each year by a different society, and this year the arrangements were handled by the Chicago Rock and Mineral Club. More than 60 cars were present, bearing some 200 enthusiastic rockhounds—men women and children. A number of rare specimens were found among the many which were more common.



"*Diamonds—Their Origin and History*," was the subject of a lecture given by Otto Kortkamp, certified gemologist, before the members of the *St. Louis Mineral and Gem Society* at their meeting November 1, 1957, held in the auditorium of the St. Louis County Library, 6814 Natural Bridge Road, St. Louis, Missouri.

Mr. Kortkamp is of the 3rd generation of a family that has been continuously in the retail jewelry business for over 100 years. He has been connected with a large retail jewelry firm in St. Louis for the past 30 years and is currently serving as its president.



The *San Francisco Gem and Mineral Society* announces that they are now holding their meetings in their building owned and operated by the society where a well equipped lapidary shop has been installed through the cooperative efforts of many individual members. Classes in all phases of Earth Science are now in progress.

Congratulations are extended to the society, and we would like to learn of other societies throughout the country who own their own buildings. We suspect there are a few.



AUTHORS

Our leading article comes from one who has contributed much to rockhound literature—a gentleman of the old school, *Don Alfredo*, of Las Cruces, N. M. - - - Mabel and Charles Bass are ranchers at Jay Em, Wyo. - - - *Mrs. Julian Wetherby* is an authority on the mining lore of her home state of New Hampshire, wherein she resides at Keene. - - - When *Gordon Gould* wrote as he did on I. G. Y., and how "Science Hopes to Crack Outer Space Secrets", he little knew of Sputnik! But his fine presentation is nonetheless timely — perhaps even more so, under the circumstances. - - - *Earl D. Cornwell* is a chemist with Armour & Co., of Chicago, a devoted member of ESCONI, and a welcome addition to the group who put time and means at the disposal of EARTH SCIENCE, for the benefit of all rockhounds.

—BEN HUR WILSON, *Editor*.

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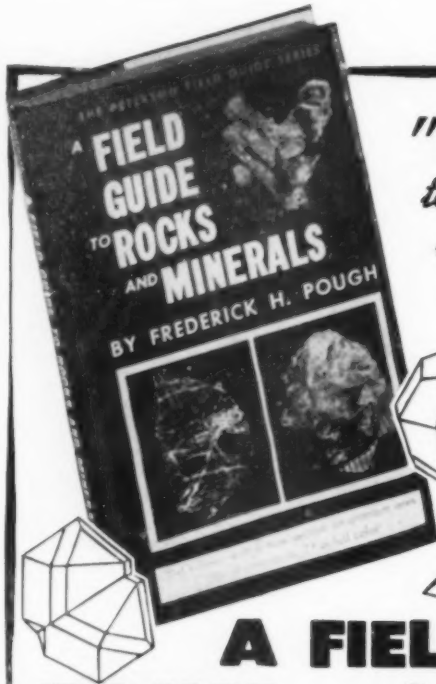
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Earth Science

NOVEMBER-DECEMBER, 1957

Vol. 10, No. 6

Bedevelled Minerals of the Land of Enchantment

by DON ALFREDO

NEW MEXICO is the "Land of Enchantment". Most of us will agree to this; we will let the word "enchantment" stand quite as is. However, when it comes to describing some of New Mexico's minerals, it is well to remember that "enchantment" is not far removed from "sorcery", "bewitchment" and "deviltry". None of these words should be applied, politely at least, to New Mexico as a whole, but some of the minerals which have come to my attention might well be described as "bewitched" or "bedevilled".

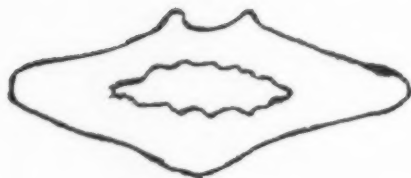
I believe that in some cases these bedevilled minerals are unique to New Mexico; in many other cases I know definitely that this is not true. The first of these non-unique items which comes to my mind is the cave pearl or oolite. A source of cave pearls *may* be found in any cave, but the fact is that such incidents are rare. Stalactites and stalagmites—common enough in limestone solution caves, but cave pearls, no. A cave pearl is, strictly speaking, a stalagmite. A stalactite is formed on a cave ceiling as calcite-charged water drips from a prominence, leaving a very slight precipitate of calcite behind at the point of departure. A stalagmite is built up on the cave floor in a somewhat similar manner, only the precipitation of the calcite occurs, in this case, when the drop of calcite-charged water strikes a pointed mass of calcite which has already been built up by the same method. Suppose, however, that the *first* drop of calcite-charged water, destined to begin the formation of a stalag-

mite, instead of falling on a solid "secure" surface, lands upon a fragment of gravel which thus acquires a coating—extremely thin—of precipitated calcite. The next drop gives the gravel fragment a slight addition to its coat of calcite and furthermore (and here's the important point) the particle of gravel, struck by the drop of water, makes a slight movement from its previous position. As this process continues—over a period of many years, probably—this stalagmite grows to considerable size and remains detached from its surroundings. It can thus be classified as a "detached stalagmite" or *cave pearl*. There is, presumably, a limit to the size a cave pearl can reach, for as the pearl increases in size it grows heavier until finally the dropping water is not able to move it, whereupon it continues to grow cemented to the ground, which is probably calcite coated over a large nearby area.

I do not know how many New Mexico caves yield or have yielded cave pearls, but if there are many sources, they are certainly not publicized. Presumably when these "detached stalagmites" form within a mine they should, properly, be called "mine pearls". Here again, I do not know how many sources there are of mine pearls in New Mexico, and again it can be said that if there are many they are not well publicized. In January, 1951, *New Mexico Magazine* published my article, "Dona Dora's Pearls", concerning a source of mine pearls in the old, hazardous, Dona
(Continued on page 11)

Principal characteristics of "Coolie Caps"

Typical "Core"
Baker Ranch, Var.



Section



Side View

Material: Chalcedony.

Color: Generally blue or bluish; frequently white or nearly so. Generally one color throughout mass; occasionally shot through with blotches of black, brown, etc., agate; occasionally shot through with needles of rutile (?) or tourmaline (?).

Shape: Usually as above, but frequently distorted and sometimes fragmentary. Multiples frequent; not often pairs, but triplets or better. When multiplied, depression faces generally obscured within the formation. Many specimens hollow, the hollow portion usually lined with quartz crystals; very frequently with botryoidal accumulations of chalcedony—"caviar".

Surfaces: Usually show striations as indicated above, suggesting shrinkage on cooling. The depression, customary on one face, also suggests slow cooling of a fluid mass (as formation of pit at base of candle wick and at some point on paraffin on jar seal) but it is not known that coolie caps always form with this depressed face upward. However, they may have been often disturbed during their existence. Suggested that they may have formed high in the adjacent hills and/or mountains or in higher structures now non-existent.

Location: Only one source known to the writer, viz., South Canyon, Little Florida Mountains near Deming, N. M. Site is a rolling ridge separating two small tributary canyons near northwest "corner" of South Canyon, at elevation about fifty feet above main floor of canyon at this point. Occasional specimens, including one very large—about 4" dia., have been found near mouth of South Canyon, about three-fourths mile from usual source, always at points "downhill" from principal source and to which specimens could have been carried by water. To writer's knowledge no single specimens have ever been found outside of this South Canyon, but compound specimens have very rarely been found as far distant as Baker Ranch at Hermans, N. M., at which site are found many small, pitted, usually hollow nodule cores, generally yellowish or tannish in color and not indicating any connection with coolie caps except as being, like coolie caps, chalcedony nodules generally of geode type.

Dora Mine in the southern San Andreas Mountains. To my knowledge, this is the only source of mine pearls in New Mexico. I have been criticized mildly for dubbing these oolites "mine pearls" because, as my critics say, they aren't perfectly spherical; they have protrusions and while many of them have a high degree of natural polish (acquired through their constant movement during formation) some of them have a granular or drusy surface. To this I reply, that cave pearls also have all of these faults and, sacreligious although it may be to men-

ill-chosen, since these minerals are far removed from pearl color.

New Mexico has an abundance of lava of various kinds. In this it is not alone, thus whatever strange materials form in New Mexico lava may be found elsewhere. Therefore, I hesitate to claim New Mexico as a "one source" for any of the following be-devilled minerals. However, I can truthfully say that I have never found, otherwise acquired, or read of the same forms being found at other locations than those mentioned.

Imagine a good sized handful of



"COOLIE CAPS" (those with star above are compounded)

tion it, so do real pearls.

It is only fair to mention that stalactites, stalagmites, and detached stalagmites may form from other materials than calcite; and gypsum, chalcantite (copper sulfate), marcasite (iron sulfide) and many other materials form stalactites and stalagmites and thus probably form cave or mine pearls. However, in the case of these minerals, the word "pearl" would be

completely dry flower blossoms which you have removed from your garden. You have crushed them into a sort of ball. They are hardly distinguishable, yet you know at a glance what they are—compressed, dry, flower blossoms. Now suppose this lump of material petrifies—turns to stone. In Foster Canyon, near Radium Springs, N. M., I have found many masses of this "Foster Canyon Flower Stone".

Unlike petrified wood, this material never saw vegetable material and its flower-content appearance is a coincidence only. It is lithophysal chalcedony—chalcedony deposited in a bubble of rhyolite (a lava) and crystallized into radiating forms as the rhyolite cooled. As the rhyolite weathers away, the "flower stone" is left exposed.

A hollow rock, lined with crystals, is called a geode. If it is not hollow but is completely filled with material, it is called a nodule; and if the nodule is (especially) agate-filled it is designated as a "Thunder Egg" or "Thunder Bird Egg". If the rock is hollow, but not lined with crystals, it has no particular name although "hollow nodule" seems rather acceptable. In the same Foster Canyon there are small fragments of hollow nodules of chalcedony which, due to their yellow color, I have dubbed "Petrified Honey". Here again, the material never saw animal or vegetable material and the resemblance to honey—and the resemblance isn't very close, I will admit—is merely coincidental. These fragments are of such size that the original nodule from which they were formed may have been as large as, say, a grape. The interior and exterior surfaces are usually rough and pitted, somewhat like a peanut shell in appearance and color, and the shell thickness seldom exceeds a sixteenth of an inch.

At one location in the Mogollon Mountains, northeast of Willow Creek, there is about an acre of pine-covered hillside where "Apache Tears" (nodule of obsidian—volcanic glass) can be picked up at the rate of about a gallon per hour. That is fast "Apache Tear" collecting—so fast, in fact, that one might completely fail to observe the numerous odd-formed thunder eggs. This is the source of the strangest thunder eggs that have ever come to my attention. Their interiors are not usually colorful, thus they have little appeal to the processor of stones

—the lapidary—but as found they have a myriad of bedevilled appearances suggesting fried eggs (rather decomposed due to age), chewing gum that has been chewed and spit out, animal brains, or even bird entrails. These specific names are not particularly parlor-conversational material, so I dubbed the whole stock with the all-inclusive name of "Goshawfuls". They're not large—probably never exceed a walnut in size.

In an area near Hermanas, on the New Mexico-Mexico border, are found many small geodes from which the original rhyolite matrix has completely weathered away. Strictly speaking these should be described as "geode cores" if they have been cut or broken open and proved hollow. However, in some cases they are not hollow, and thus should be called nodules or thunder eggs. Since it is generally impossible to be sure whether the item is or is not hollow without spoiling it, it has become common custom to refer to these merely as "cores". Here again their appearance sometimes suggests the inelegant chewed and spit out piece of chewing gum, except that the color is more attractive. They are generally of a yellowish, tannish or pinkish translucent chalcedony, occasionally shot through with shafts of chalcedony or other material of contrasting color. Here again, their size seldom exceeds that of a walnut and generally grape-size can be taken as an average.

At the same Hermanas location there have occasionally been found strange masses of chalcedony—matrix-free—which resemble "wads" of flowers. These are not like the "Foster Canyon Flower Stone" in that they are much more "orderly"—as though the flowers, instead of being squeezed into a lump indiscriminately, had been sort of stacked one above another and then moderately compressed into a sort of sausage shape. I do not own and have no photograph of a specimen of this material, but like the

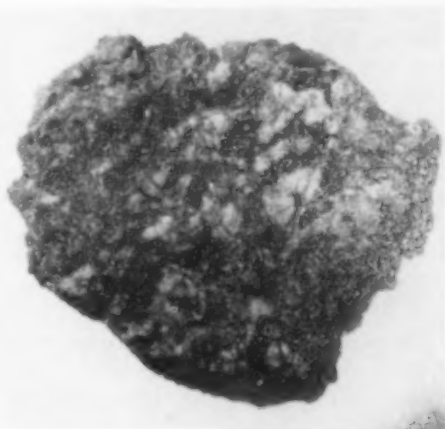


"GOSHAWFULS" (left), OOLITES — "CAVE (MINE) PEARLS" (center), "COOLIE CORES" (right)

"cores" I have seen it from nowhere else and wonder if it is unique to this locality.

Stranger to most first-time observers than anything previously described here are the so-called "Coolie Caps" of South Canyon (particularly) of the Little Florida Mountains near Deming. You are familiar with (by direct or picture observation) the conical straw hats worn by oriental coolies. Imagine hundreds of these, petrified and then shrunk to the size of a silver dollar or smaller (down to about the size of the end of a pencil). Imagine, further, that in approximately half of the individuals the peak of the cap acquires a depression—large or small—in the shrinking process. Now go one step further and imagine that these have paired—they have joined together, base-to-base so that what you have, in effect, is two conical straw hats joined at their bases with their peaks pointed away from each other. Almost always this pairing occurs between a pointed cap and one on which there is a depression at the peak. Occasionally two depressionless caps are found paired; almost never are two paired in which each has a depression, and when this does occur there is a question as to whether or not the depression formed in the normal manner. The straw hat appearance is further enhanced by the fact that the fibres of the material (chalcedony) are always so laid out as to radiate from the peak to the brim. These "Coolie Caps" are usually of a light blue or white color. As

with the "cores", they are occasionally shot through with shafts of chalcedony of other strongly contrasting color, or with a shaft of rhyolite or other material; furthermore they are usually hollow and crystal-lined, which places them in the geode class. Occasionally are found specimens of what appear to be compounded coolie caps, three or more cemented into a single piece. In such specimens, apparently only peaked "caps" participate; I have never found such a composite with a depression-bearing cap showing, although what may happen inside a specimen, of course, always leaves room for doubt. These composites, although differing in both color and form, suggest the "wads of flowers" mentioned as from the Hermanas "cores" site. Could there be a belt of



LITHOPHYSAL CHALCEDONY — "PETRIFIED FLOWERS STONE"

strange chalcedony forms stretching from the Little Florida Mountains to Hermanas (and perhaps beyond, in each direction) within which belt there is a gradual change of form from one end to the other?

Petrified Hazel Nuts. Again, a chalcedony formation which never saw vegetable matter and thus is intentionally misnamed. These are chalcedony, but of a sort containing a high percentage of impurities, robbing the material of its translucency to such a degree that some other classification is nearly assential. The color closely approaches that of a Hazel Nut at harvest time and the shape—the separated and partially rolled-back husk exposing the true shell—well, the deception is almost perfect. I have never found, seen nor heard of other specimens of this type than the pair in my collection. They are from the northerly portion of the Little Florida Mountains.

Certainly the items I have described are not the only ones from New Mexico that might be dubbed “bedevilled” or “enchanted” minerals. They are merely those which I have found personally or acquired at “near-first-hand” in the course of several years of rockhounding and mineral and rock trading. New Mexico has many minerals and rocks, which are “one-source” materials or nearly so—such as the Red Rock ricolite, the Harding Mine pink muscovite, the Tres Hermanas spurrite; but these are not “enchanted” or “bedevilled” since their forms are those normal to rocks and minerals in general. But when an otherwise common mineral (such as chalcedony or calcite) assumes strange twists and convolutions to make it resemble—even slightly—something not usually identified with the mineral world, I like to think of it as “bedevilled” and thus quite at home in the Land of Enchantment.

“Pseudomorph”

by MABEL BASS

I AM A fragment of polished fossil wood, merely a rock to some people, yet one time long ago - - - - - so very long ago in fact, that you might become weary listening if I were to tell you how long - - - - - I was a living tree; shaking out my shining leaves to catch the sun and rain, sending down my eager roots to draw nourishment from deep within the earth; and in turn giving food and shelter to other creatures.

When found by man I appeared to be only a rough irregular stone. For a time then, I was lost in a mystery of spinning wheels, singing wires, water, and abrasives, and diamond dust. Now I am a piece of polished fossil wood.

Your curious fingers touch my gleaming surface and find it cold and hard, but your mind knows that in my jeweled heart are locked nature's secrets which scientists have longed to know. If you look closely upon my surface you may read a story of life, growth, death, decay, and resurrection. Those circular lines are growth rings. You can see cell walls, medullary rays, the Cambium layer, leaf scars, and bark. There are portions that are partially decayed and there are holes and borings made by worms (and insects). After the death of my organic substance all these features were replaced with molecules of mineral matter. And thus, I live again in stone as indestructible as anything upon the face of the earth.

The colors of nature's artifices are stored forever by the mineral matter of which I am now composed. I bring you clear gold of sunshine, lavender of cool shadows, variegated blue of

of storm clouds, and that jagged red streak is the lightning that tore me from the earth.

In shape and form I am wood, but in my chemical composition I am a



Section of Petrified Tree showing medullary rays and annular rings.
(Courtesy of Frank L. Fleener)

skies, velvet black of midnight, and translucent rose of dawn. You can see the green birth of spring and the brown kiss of autumn. There is the soft gray of rain and the angry gray

mineral compound. Thus, I am indeed, a pseudomorph, a false form. I am only a rock, a fragment of fossil wood. My past is a song of life, my present is a psalm in stone.

Midwest Club News

BERNICE REXIN, *Club Editor*

3934 North Sherman Blvd.

Milwaukee 16, Wisconsin

Michigan Gem and Mineral Society made a late summer trip to Flin Ridge, Ohio, for cutting material. The flint found on this ridge was so highly valued by Indian tribes that they were known to declare truces so that they might peaceably mine the ridge side by side. Digging is permitted all along the seven mile ridge except on the 586 acres set aside by the state of Ohio as an historical preserve.

◆

Central Iowa Mineral Society members collected many nice geodes from the Keokuk geode fields during the summer. They report that geodes can

be found almost anywhere within a 40 mile radius of Keokuk.

◆

Minnesota Mineral Club made a field trip on October 13 to the Anderson Aggregate Pit, Osseo, Minnesota, to collect agates. This pit is an excellent source of Lake Superior agates but should not be prospected without guidance because it contains dangerous quicksand areas.

◆

Earth Science Club of Northern Illinois on November 8 heard Mrs. Isabel Wasson, geologist, speak on "Limestone". At the conclusion of her talk,
(Continued on page 26)

New Hampshire's Historic Soapstone Quarry

by MRS. JULIAN WETHERBY

IN FRANCETOWN, N. H., soapstone was discovered by Daniel J. Fuller and his son John in May, 1808.

In 1786 Daniel Fuller and Joseph Guild came to Francetown, bought a tract of some 300 acres of land and put up a small house in 1789. The next year Fuller married and later Guild gave Fuller \$100.00 for choice of the land, "to get rid of the rocks". He chose the land without the rocks.

The Fuller family had to mortgage the farm and talked of giving up the land. As he and son John went out to fix a fence, he dropped his axe. Expecting to find a nick in the blade of the axe, as it had taken a chip out of the stone it hit, they were surprised to find the axe in perfect shape. Fuller said, "It cuts like old cheese". Before the year was out they began to work the quarry. Soon his debts were paid and he built a large house in 1811.

The stone sold for \$17.00 a ton in 1817. It was taken to Boston by teams, taking six days for the round trip.

In Jackson's "Geology", he states:

"The soapstone was discovered accidentally in 1794 while Fuller was ploughing his field. He remarked that the plough and harrow did not make any gritting noise in passing over this ledge, while it did on others. On examining the rock he found it to be a soft variety of soapstone.

"The soapstone is a very soft variety of crystalline talcose rock, composed entirely of interlaced crystals or laminae of talc. It is between walls of mica slate and runs parallel with the strata, N.E. and S.W. In the widest part the bed measures 40 feet in thickness."

The main quarry lies about a mile east of the village.

The stone is known by different names in different places, as talc, steatite, soapstone, potstone, french chalk, talcose rock, and in Francetown it was called freestone for many years because it could be freely cut by ordinary tools.

The mode of quarrying the soapstone was to saw out the blocks by means of large cross-cut saws, so as to obtain sound blocks and as little waste as possible. They cut away the ends of the blocks and then sawed off the blocks with a cross-cut saw. The usual size of the blocks was 6 feet by 3 feet and 7 feet by 5 feet. But smaller ones were also valuable. It is estimated that 12 cubic feet of this stone weighs a ton. It cost from \$7 to \$10 a ton to quarry the stone. At this time it sold for \$36 a ton in Boston.

Later it was carried by teams to Nashua and from there taken by rail to Boston.

Dr. Charles T. Jackson said, "The Francetown stone, for color, beauty and evenness surpassed all other soapstone known".

It is an excellent material for lining stoves in which anthracite coal is burned, protecting the iron, while it keeps up a mild and steady heat. It is also made into sinks, watering-troughs, hearths, floors, slate pencils, mantels, fireplaces, boiler tops, ink stands, flue stones, and sizing rollers in the cotton mills. Its fine powder or dust is used for diminishing friction and for mixing with black lead (graphite) in the manufacture of melting pots. It takes a beautiful polish and retains it for a long time.

The sizing rollers were manufactured from this stone in Boston, and were 4 feet 6 inches long and from 5 to 6 inches in diameter.

On account of its softness and freedom from grit it is preferred to that obtained from other places and commanded the highest price.

After the death of Daniel J. Fuller in 1857, the Francestown Soapstone Co. was incorporated and work continued. This quarry while being worked was quite free of accidents.

In a newspaper article of 1869, it is said that they had reached a depth of 80 feet and the company employed about 30 men. Four six-horse teams were used daily to transport about twenty tons of stone.

The same article speaks of "revolving ovens, 9 feet in diameter" used in large bakeries, for which much of the soapstone was required at that date.



Present View of the
Old Mine Site

The report in 1891, was that the Francestown Soapstone Co. had now worked to a depth of 134 feet, and still no failure of running out of stone. They now employed 60 men.

Another company, the Union Soapstone Company, worked an arm of the old quarry and employed 50 workmen. They quarried more than 2,000

tons annually. This company also operated a quarry at Chester, Vt.

This Francestown quarry was still being worked in 1900.

During the First World War an unsuccessful attempt was made to reopen the quarry. The quarry is now filled with water.

Jackson stated: "It was one of the few stones which were wrought by the aboriginal inhabitants of this country, and from it they made the pots in which they boiled their food or heated water. Sometimes they used it in place of chlorite, which they generally preferred for smoking pipes. They do not appear to have wrought any quarries, but depended on the loose stones found in the soil for their supply".

Some of this information is taken from the "Francestown History" and some from Jackson's "Geology of New Hampshire".

Midwest Convention

Downer Grove, Illinois

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The big news of the day is the Midwest Convention. Send in your reservations as soon as possible to the following Chairmen:

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Science Hopes to Crack Outer Space Secrets

(Published in May, 1957, and reprinted by permission of author and publisher. Illustration by permission of Wide World Photos.)

by GORDON GOULD

MANKIND HAS ALWAYS been fascinated by the earth. From the beginning of recorded time, our curiosity and need have driven us to venture beyond our known horizons, seeking to explore every cranny of our environment.

And yet, in the million years since human life appeared on earth, how much have we really learned about our environment? What about glaciers, those mammoth rivers of ice which sprawl across six million square miles of frozen planet? What about the great air masses that sweep around the globe faster than hurricanes? What about earthquakes, weather and climate, graily, cosmic rays, the northern lights? And what about the ocean and the movement of its currents?

Although our telescopes have peered 12,000,000,000,000,000,000,000 miles into outer space, we have drilled no deeper than 21,482 feet into the earth itself, only a thousandth of the distance between the surface and the burning core.

Alexander the Great is said to have wept because there were no more worlds to conquer. But even now, 21 centuries later, there is a snowbound continent 107 times larger than Illinois that has never been crossed on foot.

And, according to a prominent scientist, "we know less about the 70 per cent of the earth's surface covered by the ocean than we do about the surface of the moon!"

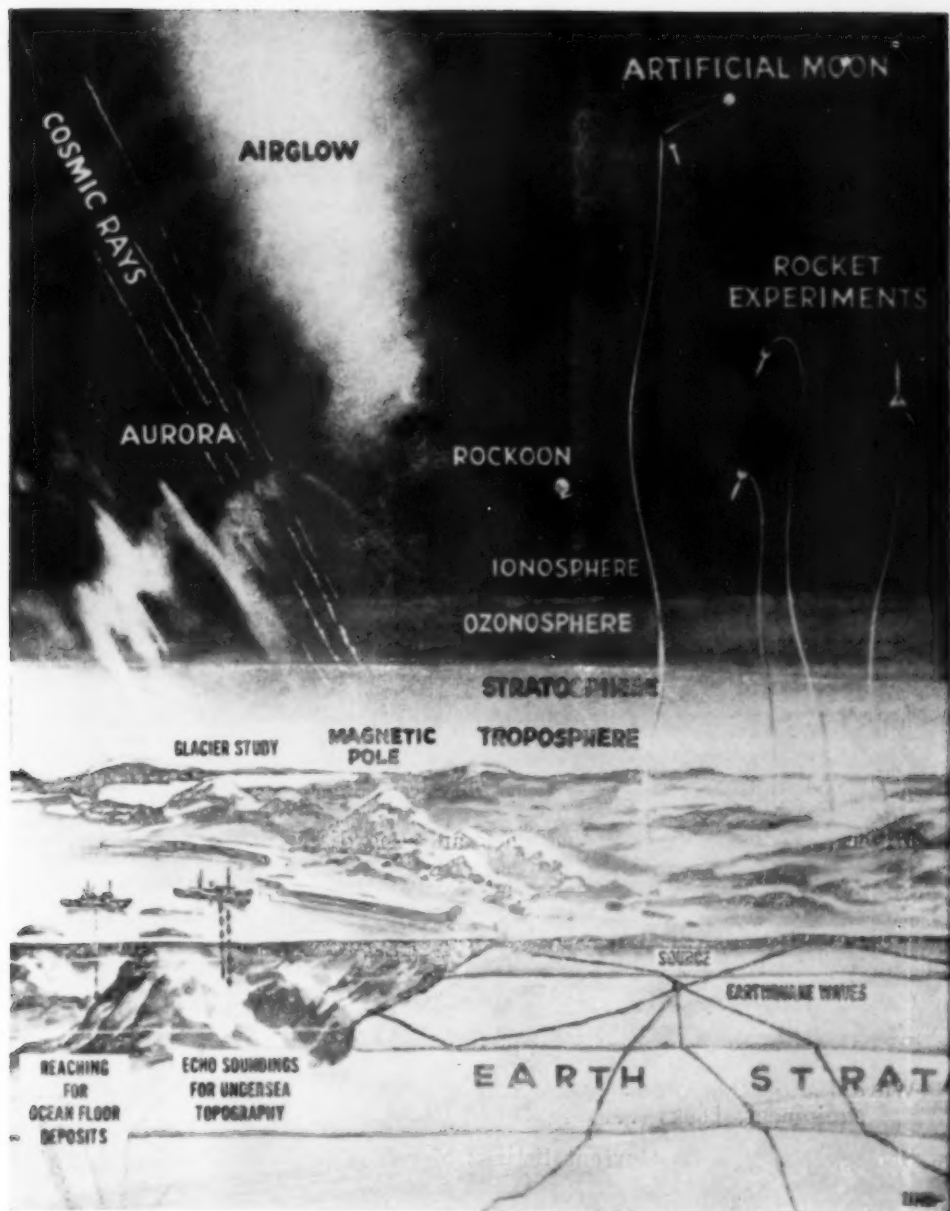
Aware of the fragmentary nature of present day geophysical knowledge, the world is at this moment preparing

to launch the most intensive assault on the secrets of creation that mankind has ever seen. For 18 months, beginning July 1, more than 5,000 scientists from 56 countries will scour the earth from the North Pole to the South Pole, explore the unexplored, and reach into the tantalizing void of outer space, hoping to penetrate farther than ever before into the whys and hows of nature.

This bold project is known as the International Geophysical Year (IGY). It will represent an outstanding achievement not only in the advancement of science but also in international cooperation. Since the winds know no boundaries and the seas carry no passports, all information gained from the thousands of individual expeditions and experiments will be pooled in World Data centers, to be made available to scientists of all countries. Even the iron curtain will be lifted in the name of science. In fact, Russia has offered to print and distribute the collected information at her own expense.

The extent of the IGY is incredible. Nearly 2,000 observing stations are being established in five pole-to-pole chains so that a continuous cross section of the earth's atmosphere and the effect of its circulation on world weather conditions can be studied.

Technicians are setting up shop in far away places that savor of adventure and intrigue: Thursday Island, Botany Bay, Algieras, Cadiz, Casablanca, Dakar, New Caledonia, Saipan, Palau. They will even commandeer floating blocks of ice in the Arctic ocean.



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And, in Antarctica, that supposedly uninhabitable continent at the bottom of the globe, no less than 11 countries have built base camps, raising to approximately 600 the population of a land that until 1898 had never borne the weight of man.

Several countries will be firing peaceful missiles into the sky to relay information about the upper atmosphere back to earth. The United States, for instance, expects to launch a series of instrument laden "rockoons" (rocket propelled balloons) and "Aerobees" (1,250 pound rockets with a verticle range of over 125 miles), as well as the much publicised "earth satellites" or artificial moons.

The satellite program is admittedly a gamble, since no one knows how long the little moon will stay up before it plunges back into the earth's atmosphere and disintegrates from friction. There is also the problem of tracing it, once it has been launched into its orbit. Traveling at altitudes of 300 to 1,500 miles, it will circle the world 15 times every 24 hours and will be visible only at sunrise and sunset. It will streak across the entire United States in 10 minutes.

To make sure the satellite doesn't get lost, an army of observers has been recruited to train telescopes on various portions of the sky. In Chicago, the ground observer corps will man a "moon tracking" station in the Edgewater Beach hotel.

The 56 countries participating in IGY plan to spend over \$100,000,000 on geophysical research and exploration. Of this, the United States will account for \$39,000,000, which will pay for investigations in 13 scientific fields. What return do these countries expect from their investment? Here are the major goals which the IGY has set for itself:

Shape of the Globe

For the last 2,400 years, thinking

men have believed that the world is round. Today, we think it is shaped more like an onion, squashed at each end. In order to calculate its exact shape as well as the thickness of the outer crust and the movement of molten metals beneath, scientists will observe how the orbit of the artificial moon is governed by the earth's attraction.

In an era when guided missiles are vital to military strategy, it is important to know what variations in the force of gravity and the distance between point and point are caused by the earth's shape.

Measurement of Land Masses

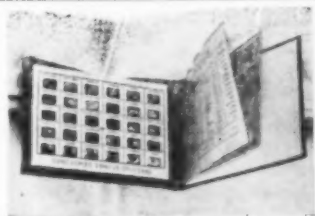
Even our best maps are inaccurate. Islands have been found to be a mile or more from their charted positions; entire continents may be drifting; and at least one continent—Greenland—may actually be a collection of smaller islands, connected by a huge ice plateau.

Then, too, the world is growing warmer and the great polar ice caps and mountain glaciers which cover a tenth of the earth's surface are slowly melting. But we don't know how fast. If all the ice were to melt, sea level would rise high enough to submerge all coastal areas and seaport cities!

Consequently, scientists plan to resurvey many parts of the world and to measure the enormous ice fields that shroud two continents and grind through four others.

Weather

Airplanes, balloons, and rockets will be sent into the sky to collect data on the various layers of air which surround our planet. Technicians will trace the course of jet streams, those rushing rivers of air that can hasten or impede a plane's flight. They will take air pressure, humidity, and temperature readings up to 100,000 feet; search for the connection between



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earthquakes and midocean storm centers; determine the relationship between weather conditions at the South Pole—the earth's principal source of cold weather—and other parts of the world.

Because we are particularly ignorant about wind currents in the southern hemisphere, this research will be conducted mainly between the equator and the South Pole. When the "Year" is concluded, we should be able to forecast more accurately the meteorological changes that daily affect our lives.

The Ocean

IGY scientists plan to concentrate on the deep currents far below the ocean's surface. These currents are important in long range weather prediction, primarily because they carry water from the Antarctic to the tropical latitudes and back again. As yet, no one knows whether the round trip takes 100 or 10,000 years. They are important, too, in estimating the amount of fish and other food that is available to us in the ocean, since the ocean's fertility depends on the exchange of water between the deeps and the upper waters.

And they may be important as a means of disposing of radioactive wastes from atomic laboratories and power plants. But before we can safely use the ocean as a dumping ground we must learn how fast the deep water moves and how it mixes with the surface water.

Scientists also intend to chart the ocean floor and test for hidden mineral deposits.

The Sun's Rays

We know that all life comes from the sun. But the way in which solar energy affects the earth still is pretty much a mystery—a mystery concealed by our atmosphere, that canopy of air which enables us to breathe and which

insulates us from the sun's deadly radiation.

Scientists hope to probe into this canopy and into the space beyond. They want to learn more about the physics and chemistry of the ionosphere, that part of our atmosphere which extends from 40 to 400 miles above the earth. They want to learn more about the changes caused by solar activity in the earth's magnetic field, about air glow (the hazy light that brightens the sky on moonless nights), about the aurora, or northern lights (which are somehow linked with radio fadeout), about ultra violet and cosmic rays.

Fortunately, these and other solar effects are most noticeable during the peak of the 11 year sun spot cycle, which will occur during the "Year". Another such opportunity to study the relationship between sun and earth won't roll around again until 1970.

The results of this research will be invaluable in weather forecasting, in predicting the quality of radio reception, in selecting alternate frequencies which could be used if normal channels are blocked, and in planning future space travel. The sun spot show may play tricks with our TV reception, but it will be a blessing to the "Year".



The IGY scientists, who represent 90 per cent of the earth's population, are the pioneers of a new age of discovery, an age in which men are interested not so much in exploring strange lands as in re-exploring the lands they already know. What they learn during the next 18 months will help us to live more comfortably and more safely, for our ultimate survival as creatures of the universe depends on how much we know about the ground under our feet, the seas around us, the air we breathe, and the limitless space that lies beyond our spinning world.

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MIDWEST CLUB NEWS

(Continued from page 15)

Mrs. Wasson presented a sound movie, "The Bahamas, Where Limestone Grows Now." The movie was loaned by the Humble Oil Company.

◆
Geological Society of Minnesota on October 14 heard the first in a series of 12 lectures on "Structural Geology". The course is being presented by Dr. J. Campbell Craddock, Department of Geology, University of Minnesota. Classes are held at 7:30 p.m. on the second and fourth Mondays of each month, in Ford Hall, University of Minnesota. Visitors are welcome.

◆
Nebraska Mineral And Gem Society reports that two of its members and a trucker found a 300 pound geode near Wayland, Missouri, about seven miles west of Keokuk, Iowa. While Pahl Thompson and Russell Kent were hunting lapidary material in the area, a passing trucker drew their attention to the geode in a field near the highway. They cut the geode in two with their chisels and the trucker took half and left the other half for Mr. Thompson and Mr. Kent. The geode has a maximum circumference of 65 inches and its inside cavity, which is lined with quartz stained yellow by limonite, is 11 inches deep. The specimen was appraised at \$100 or more by the Geode Industries of New London, Iowa.

◆
Chicago Lapidary Club on September 5 heard John R. Millar, Deputy Director of the Chicago Natural History Museum, speak on "The Case of the Sun God Opal". Mr. Millar's talk was rich with myths and facts about the precious stones in the Museum's Gem Room.

◆
Michigan Mineralogical Society recently made a conducted tour in mine cars to the Grand Rapids Plaster Mine. Members of the party were taken through a mile and a half of gypsum tunnel to the main alabaster body (the purest layer of gypsum ever found), where they were allowed to collect as much sparkling pencil ore and carving quality alabaster as they could carry. Officials of the mine also briefed them on mining methods, thrilling mine machinery and the mine's output.

◆
Wisconsin Geological Society at its November meeting heard Dr. Katherine Nelson discuss "Wisconsin Fos-

sils". Beginning with the Pre-Cambrian era, when no known fossilization occurred, Dr. Nelson carried her listeners through the Silurian and Devonian periods when, during the alternating warm and cool submersions of the Midwestern states, abundant fossilization occurred. It was during the Paleozoic period that the marine waters teemed with trilobites that today are known only through their fossil records.

◆
Hancock Geological Society had a large display of rocks and minerals at the Hancock County Fair in September. This display proved very interesting to a great many people who admitted that they had thought very little of rocks and minerals before.

During the first week in October, HGS visited the Medusa quarry where, despite an all day rain, its members found some nice trilobites.

◆
Flint Rock and Mineral Club on October 10 viewed colored slides of rocks and minerals which were shown and commented on by Dr. Benjamin Moulton.

The society is planning to display at the Mott Foundation Arts and Craft Show, which will be held the first two weeks in December.

◆
Miami Valley Mineral and Gem Club recently enjoyed an interesting program on petrified wood which was presented by Forrest and Mary Shumaker. With the aid of five shadow box scenes, Mr. Shumaker gave the history of petrified wood and showed how it is found today. Then, via slides, Mr. Shumaker took the group on a trip in search of petrified wood in the west. The Shumakers then projected "pictures in rocks" on the screen from thin sections of petrified wood.

◆
Chicago Rocks and Minerals Society will hold its annual Christmas Party on December 14. Gerald Ostrum, Editor of the *Pick and Dop Stick*, will present an illustrated lecture on "The Gold Country in Alaska and the Yukon". Refreshments will be served and visitors are cordially invited.

◆
St. Louis Gem and Mineral Society on November 1 heard Mr. Cortkamp, President of the Hess Culbertson Jewelry Company, discuss "The History and Romance of Diamonds". Mr. Hess also displayed a lovely collection of diamonds.

(Continued on page 28)



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The Gemstone Magazine

Official Publication of the Northwest Federation
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MIDWEST CLUB NEWS

(Continued from page 26)

Compton Gem and Mineral Club is furnishing safety goggles to all members who sign up for them. Members are advised to wear them on field trips while breaking rocks and in the shop while sawing or grinding rocks.

◆
Rochester Earth Science Society at a recent meeting listened to an interesting talk on "Antarctica," by Dr. Duncan Stewart. Dr. Stewart spent a year at Cambridge studying material brought back from the Antarctica by Admiral Byrd.

At the American Federation Show in Denver last June, RESS members Harold and Jessie Whiting's entry of cabinet specimens won the Woodruff Trophy.

◆
Evansville Lapidary Society at its annual picnic at Angel Mounds, heard Walter "Chief" Suagee, Cherokee Indian, give an enjoyable and scholarly talk on the history and customs of his people. Next, Harry Beratis, a student from Greece, who is doing archeological research at Angel Mounds, showed colored slides of Greece and sang some native folk songs.

OTHER SOCIETIES

◆
Oklahoma Mineral and Gem Society received instructions on faceting from Linton Riggs on September 5. To illustrate his points, Mr. Riggs used a projection microscope to show enlargements of cut stones on a screen. When a one carat stone is magnified to the size of a small boulder, color zoning, striations, bubbles, feathers, inclusions, flaws in cutting, etc., are easily seen.

◆
Verduga Hills Gem and Mineral Society reports that several of its members recently made a four-day trip into the Nevada desert. On the way they stopped at a saddle formation and collected black, cinnamon and gold sheen obsidian. At Fish Valley on their second day out, they found the ground covered with apache tears which twinkled in the sun like sequins. They scooped up about 50 pounds of the dark tears. The next day they dug a petrified tree out of the Esmeralda (dry) lake bed. They completed their trip with a tour of the ghost town of Bodie. This town, which once harbored 10,000 people, is soon to be made into a historical museum by the state of Nevada.

◆
RECOMMENDED READINGS
"The Mineralogy of Meteorites," by

Dr. C. Beck, November issue of *Geologem*. Long before man learned to get iron from ore he was beating iron swords from meteorites. Today man is analyzing the meteorites for a clue to the composition of the universe. "Eastern Collecting Trip", by Robert Kissack, September issue of *Rock Lore*. A mine of information on collecting areas in the East. "All About Scales," by Rosemary Klinkenberg, October issue of *Rock Rustler's News*. Learn your Moh's scale with a chuckle.

JUST FRESHLY STOCKED with thousands of pounds of New Mexico nodules, geodes, and beautiful colored agates; also, Old Mexico lace-agate, Idaho agate and new beautiful iridescent massive New Mexico specimens. Their beauty is beyond description. Stop and make your own personal selections. HARVEY R. SHULL, 1516 South Market Street, Oskaloosa, Iowa.

DINOSAUR TRACKS: 15 classified fossils, \$2.00; 50 classified, \$7.50; 20 Texas minerals, some crystal forms, \$2.50; Mammoth teeth and large fossil bones, 15 classified Pennsylvanian from Texas, \$2.50. PIONEER MUSEUM, Burnet, Texas.

OPALS. COLOR PICTURES in a 16 page pamphlet with articles on opal industry, by C. B. Slawson; the Australian opal fields, by R. B. Stokes and the Cranbrook collection by R. T. Hatt. 40c postpaid, or with 56 page illustrated Guide to Exhibits, \$1.00 postpaid. CRANBROOK INSTITUTE OF SCIENCE, Desk ES, Bloomfield Hills, Michigan.

SHELLS FROM FLORIDA: fifteen. \$2.25. Ten Ordo. fossils, \$2.00. Five Dev. fossils, \$1.50. Classified. R. BOWMAN, 1030 Ohio Ave., Lemoyne, Pa.

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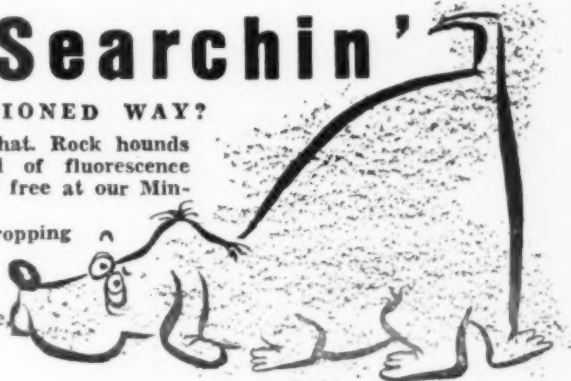
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